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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,908	07/08/2003	Hsing-Sheng Liang	CIS03-27(7227)	7926

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David E. Huang, Esq.  
CHAPIN & HUANG, L.L.C.  
Westborough Office Park  
1700 West Park Drive  
Westborough, MA 01581

EXAMINER
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WRIGHT, INGRID D

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/614,908

Applicant(s)

LIANG ET AL.

Examiner

Ingrid Wright

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 7-08-2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 and 26 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 7, 8, 9, 10, 12-17, 20, 21, 23, 24 is/are rejected.
- 7) ☒ Claim(s) 4, 11, 18, 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10-20-2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/1/2004</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification Objections***

1. On page 9 of the specification, line 9, there is an error regarding the circuit board number. The circuit board (33) should be labeled as circuit board (36) as it is the same circuit board (36) disclosed on page 9, line 8. Also, circuit board (33) is not disclosed or described anywhere else in the application.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-3, 5, 8, 9, 10, 12, 15, 16, 17, 19, 23, and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Cohen (US PN 6549410 B1).

With respect to claim 1, Cohen teaches (Fig. 1) a fastener (14) having a head portion (C) and a shaft portion, the head portion (C) configured to generate a stress on a heat sink (50) to secure the heat sink (50) with a circuit board component (20,30,22) and the shaft portion having a flange (33) substantially

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perpendicular to a long axis defined by the shaft portion, the flange (33) configured to abut a surface of a circuit board (26) carrying the circuit board component (20,30,22) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22); and a compressible member (12) in communication with the shaft portion of the fastener (14) and configured to orient between the head portion (C) and the heat sink (50), the compressible member (12) having a diameter configured to expand (inherently) when the head portion (C) compresses the compressible member (12) and generates the stress on the heat sink (50) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 2, Cohen teaches a first shaft portion (Fig. 1) having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft portion and the second shaft portion defining the flange (33), the second shaft portion configured to couple with a side portion of a support member (24) associated with the circuit board (26) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 3, Cohen teaches the first shaft portion (Fig. 1) of the fastener (14) that defines a length such that the length of the first shaft portion

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limits deformation of a solder joint between the circuit board component (20,30,22) and the circuit board (26). (inherently)

With respect to claim 5, Cohen teaches (Fig.1) the diameter of the compressible member (12) is greater than a diameter of the head portion (C) of the fastener (14).

With respect to claim 8, Cohen teaches (Fig. 1) a heat sink apparatus for cooling a circuit board component (20,30,22) mounted to a circuit board (26), the heat sink apparatus comprising: a heat sink (50); and heat sink attachment mechanism comprising: a fastener (14) having a head portion (C) and a shaft portion, the head portion (C) configured to generate a stress on the heat sink (50) to secure the heat sink (50) with a circuit board component (20,30,22) and the shaft portion having a flange (33) substantially perpendicular to a long axis defined by the shaft portion, the flange (33) configured to abut a surface of a circuit board (26) carrying the circuit board component (20,30,22) when the fastener(14) secures the heat sink (50) to the circuit board component (20,30,22); and a compressible member (12) in communication with the shaft portion of the fastener (14) and configured to orient between the head portion (C) and the heat sink (50), the compressible member (12) having a diameter configured to expand (inherently) when the head portion (C) compresses the

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compressible member (12) and generates the stress on the heat sink (50) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 9, Cohen teaches (Fig. 1) the shaft portion comprises a first shaft portion having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft portion and the second shaft defining the flange (33), the second shaft portion configured to couple with a side portion of a support member (24) associated with the circuit board (26) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 10, Cohen teaches the first shaft portion (Fig. 1) of the fastener (14) which defines a length relative to a height of a circuit board assembly (26) such the length of the first shaft portion limits (inherently) deformation of a solder joint between the circuit board component (20,30,22) and the circuit board (26).

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With respect to claim 12, Cohen teaches the diameter of the compressible member (12) is greater than a diameter of the head portion (C) of the fastener (14).

With respect to claim 15, Cohen teaches (Fig.1) a circuit board component (20,30,22) mounted to the circuit board (26); a heat sink (50); and a fastener (14) having a head portion (C) and a shaft portion, the head portion (C) configured to generate a stress on the heat sink (50) to secure the heat sink (50) with the circuit board component (20,30,22) and the shaft portion having a flange (33) substantially perpendicular to a long axis defined by the shaft portion, the flange (33) configured to abut a surface of the circuit board (26) carrying the circuit board component (20,30,22) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22); and a compressible member (12) in communication with the shaft portion of the fastener (14) and configured to orient between the head portion (C) and the heat sink (50), the compressible member (12) having a diameter configured to expand (inherently) when the head portion (C) compresses the compressible member (12) and generates the stress on the heat sink (50) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 16, Cohen teaches a first shaft portion (Fig. 1) having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft portion and the second shaft defining the flange (33), the second shaft portion configured to couple with a side portion of a support member (24) associated with the circuit board (26) when the fastener (14) secures the heat sink (50) to the circuit board component (20,30,22).

With respect to claim 17, Cohen teaches the first shaft portion (Fig. 1) of the fastener (14) defines a length relative to a height such that the length of the first shaft portion limits inherently deformation of a solder joint between the circuit board component (20,30,22) and the circuit board (26).

With respect to claim 19, Cohen teaches the diameter of the compressible member (12) is greater than a diameter of the head portion (C) of the fastener (14) (Fig. 1).

Regarding the method claims 23 and 24, the method steps recited in the claims are inherently necessitated by the device structure as taught by Cohen.



***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 7, 13, 14, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen.

With respect to claims 6, 13 and 20, Cohen discloses a compressible member except for comprising a compliant elastomeric material.

The Official Notice is taken of the fact that compliant elastomeric materials were known in the cooling art for their good extension and retraction properties at the time the invention was made.

It would have been obvious to one having ordinary skill in the cooling art at the time the invention was made to use elastomeric materials for making the compressible member, of Cohen, in order to provide said member with good extension and retraction properties, since it has been held to be within the

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general skill of a worker in the art to select a known material on the basis of suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416

With respect to claims 7, 14, and 21, Cohen discloses a compressible member except for comprising an electrically conductive material.

The Official Notice is taken of the fact that electrically conductive materials were known in the cooling art for their good extension, retraction and EMI protection properties at the time the invention was made.

It would have been obvious to one having ordinary skill in the cooling art at the time the invention was made to use electrically conductive materials for making the compressible member, of Cohen, in order to provide EMI protection, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

***Allowable Subject Matter***

4. Claim 22 and claim 26 are allowed.

Claims 4, 11, 18 and 25 are objected to as being dependent upon a rejected base claims 1, 8, 15, and 23 respectfully but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4, 11, 18 and 25, each of the claims recites "a trough portion." This limitation in combination with all remaining limitations of the claims is believed to render the claims patentable over the art of record.

Regarding independent claim 22, the claim invokes consideration under 35 U.S.C. 112, sixth paragraph because it recites "compressible means." In the disclosed specification, compressible means is described on page 12 (Lines 22-27), continues on page 13 (Lines 1-18) and shown in Fig. 2,3 (54). This limitation in combination with all remaining limitations of the claim is believed to render the claim patentable over the art of record.

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Regarding independent claim 26, the claim recites "a compliant o-ring. "

This limitation in combination with all remaining limitations of the claims is believed to render the claim patentable over the art of record.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lo (US PN 6304452 B1), Gonsalves et al. (US PN 6212074 B1), Chien (US PN 6498724 B1) and Lee et al. (US PN 6480387 B1) show the general state of the art regarding methods and modes of securing heat sinks to electronic components on computer boards.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ingrid Wright whose telephone number is (571) 272-8392. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2800, ext 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 25, 2005  
IDW

**ANATOLY VORTMAN**  
**PRIMARY EXAMINER**

A handwritten signature in black ink, appearing to read 'A. Vortman', with a long horizontal flourish extending to the right.